

## PAPUAN GRASSES COLLECTED BY L. J. BRASS, III\*

AGNES CHASE

*With four text-figures*

THE grasses here enumerated were collected in 1938–39, in Papua and in Netherlands New Guinea. Part I of Papuan Grasses collected by Mr. Brass, by A. S. Hitchcock, was published in *Brittonia* **2**: 107–130. 1936, Part II, by Agnes Chase, in the *Journal of the Arnold Arboretum* **20**: 304–316. 1939. The types of the species here described are deposited in the Gray Herbarium, with isotypes in the United States National Herbarium. Species previously collected by Mr. Brass in Papua are not included in the present paper, except when collected in Netherlands New Guinea. A few collections by J. and M. S. Clemens or by Mrs. Clemens are included when they represent species not before collected in New Guinea.

**Oreiostachys producta** Pilger, *Bot. Jahrb. Engler* **62**: 460. 1929.

NETHERLANDS NEW GUINEA: Bele River, 18 kilometers northeast of Lake Habbema, alt. 2300 m., *Brass 11072*; abundant in forest margins, downfall openings, etc., scrambling and tangled; flowering specimen. Eighteen kilometers southwest of Bernhard Camp, Idenburg River, alt. 2150 m., *Brass 12662*; scrambling to 5–6 m. in mossy forest, frequent at 1800 m., and on the highest point of the ridge at 2200 m., forming a high dense undergrowth, practically excluding the usual undergrowth and substage trees; sterile specimen.

These collections agree well throughout with Pilger's description. The palea is 2-keeled and sulcate toward the summit, the rachilla segment is prolonged and bears a rudimentary floret, the rachilla and rudiment reaching the apex of the palea. Henrard (*Blumea* **2**: 71. 1936), in reestablishing the genus *Chloothamnus* Buse, reducing *Oreiostachys* Gamble to it as a synonym, states that because of the prolonged rachilla segment and rudimentary floret he hesitated to place *O. producta* in the genus *Chloothamnus*. Endemic.

**Chloothamnus** sp.

NETHERLANDS NEW GUINEA: Six kilometers southwest of Bernhard Camp, Idenburg River, alt. 1450 m., *Brass 13020*; "upper limits of rain-forests; occasional open clumps of few stout stems up to  $\pm$  4 cm. diam. at base, 7–8 m. long, upper part weak, resting on substage trees; internodes up to  $\pm$  45 cm. long; leaves glaucous below; spikelets glaucous."

The specimen, which consists of an internode and two nodes of a stout culm and four flowering twigs, agrees with the generic description of *Chloothamnus* but differs from any known species in the open panicles, the stiff branches having pronounced pulvini at their base.

An over mature specimen collected in "Lower regions of British New Guinea" in 1894 by MacGregor, no. 49, is apparently the same species.

\*Botanical Results of the third Archbold Expedition.



**Dendrocalamus latifolius** Lauterb. & K. Schum. in K. Schum. & Lauterb. Fl. Deutsch. Schutzgeb. Südsee 188. 1901.

NETHERLANDS NEW GUINEA: Hollandia and vicinity, alt. 10 m., *Brass* 8894; shrub about 1 m. tall, plentiful on dry gravel beds in river.

The specimen consists of a single branch of inflorescence which agrees with *Brass* 7908, 8518 and 8660 from Papua, excellent specimens of *D. latifolius*, but the detached leafy shoot of *Brass* 8894 has blades only 15–20 mm. wide. Endemic.

**Dendrocalamus** sp.

NETHERLANDS NEW GUINEA: Four to six kilometers southwest of Bernhard Camp, Idenburg River, alt. 850–1200 m., *Brass* 12825, 13070, 13327; rain-forest, in flood plain and characteristic in rather open rain-forest, scrambling 2–20 m.

**Schizostachyum lima** (Blanco) Merr. Amer. Journ. Bot. **3**: 62. 1916.

*Bambusa lima* Blanco, Fl. Filip. ed. 1. 271. 1837.

PAPUA: Middle Fly River, Lake Daviumbu, *Brass* 7913 (listed as *Schizostachyum* sp. by Chase, Jour. Arnold Arb. **20**: 305. 1939). Philippines.

?**Schizostachyum** sp.

NETHERLANDS NEW GUINEA: Four kilometers southwest to Bernhard Camp, Idenburg River, alt. 900 m., *Brass* 13743; "scrambling to 4–6 m. in mossy forest; clumps of several stems about 2 cm. diameter at base."

Sterile specimen, the culm thin-walled and roughish as in *Schizostachyum*, the overlapping slightly carinate sheaths with conspicuous slender spreading fragile fimbriae from the shoulder, the fimbriae arising from thick tuberculate bases, and with a row of stiff hairs back of the very short ligule; blades somewhat plicate.

**Bromus scopulorum** sp. nov.

Perennis; culmi 50–125 cm. alti, tenues; vaginae sparse retrorse-pilosae; ligula minuta; laminae planae, 15–20 cm. longae, 2–4 mm. latae; panícula subsimplex, 12–18 cm. longa, angusta, laxa, ramis tenuibus brevibus; spiculae 2–3 cm. longae, 5–7-florae; glumae 7–9.5 mm. longae, 1–3- vel 5-nervia, ad marginem sparse pilosae; lemmata 10–13 mm. longa, 5-nervia, ad marginem dense hirsuta, arista 5–7 mm. longa.

Perennial, loosely tufted with lax-leaved innovations, purplish at base; culms ascending, 50–125 cm. tall, slender, glabrous; sheaths shorter than the internodes, thin, the lower sparsely to rather densely retrorsely pilose, becoming shredded, the upper loosely pilose; ligule minute; blades flat, thin, lax, 15–20 cm. long, 2–4 mm. wide, delicately pilose toward the base, acuminate; panicle purplish brown, nearly simple, 12–18 cm. long, narrow, lax, nodding, the short slender branches scaberulous; spikelets 2–3 cm. long, loosely 5–7-flowered, the slender rachilla segments 2.5–3 mm. long, pubescent; glumes 7 and 9.5 mm. long, narrow, acuminate, the first 1-nerved (short lateral nerves developed in some), sparsely pilose along the margin near the base, the second 3–5-nerved, pilose along the margin nearly to the summit; lemmas 10–13 mm. long, excluding the awn, 7-nerved, hirsute on the margin to the summit and at the very base, the back otherwise glabrous, the nerves scabrous toward the summit, the awn erect, slender, scaberulous, 5–7 mm. long.

TYPE: *Brass & Myer-Drees* 9825, collected in September 1938, on dry ledges of a limestone cliff, 7 kilometers northeast of top of Mt. Wilhelmina, alt. 3560 m. Netherlands New Guinea.



**Bromus** sp.

NETHERLANDS NEW GUINEA: Lake Habbema, alt. 3225 m., *Brass* 9127; common in forest glades and other sheltered places.

Tall slender perennial with nodding panicle.

**Brachypodium pubifolium** Hitchc. *Brittonia* **2**: 108. 1936.

NETHERLANDS NEW GUINEA: Lake Habbema, 3225 m. camp, *Brass* 9310; forest glade. Bele River, 18 kilometers, northeast of Lake Habbema, 2200 m. camp, *Brass* 11426; on wet marshy rocks in river. Mt. Wilhelmina, 7–11 kilometers northeast of top, alt. 3400–3560 m., *Brass & Myer-Drees* 9714, 9827; rather wet grassy valley and on dry ledge under limestone cliff. Endemic.

**Festuca nubigena** Jungh. *Nat. Geneesk. Arch. Neerl. Ind.* **2**: 51. 1845.

NETHERLANDS NEW GUINEA: Lake Habbema, alt. 3225 m., *Brass* 9325, 9547; sandy banks of streamlet and scattered over wet peaty flat; erect slender tufts 40–80 cm. high. Mt. Wilhelmina, 11 kilometers northeast of top, alt. 3400 m., *Brass & Myer-Drees* 9747; rather wet grassy valley. Same, 7 kilometers northeast of top, alt. 3560 m., *Brass & Myer-Drees* 9823; plentiful on dry ledges under limestone cliffs, 50–80 cm. high, panicles bluish. Same, 4 kilometers northeast of top, alt. 3660 m., *Brass & Myer-Drees* 9976; alpine grassland, covering marshy hollows, 70–90 cm. high. Same, northern slopes, alt. 4050 m., *Brass & Myer-Drees* 10066; wet shallow soil of old screes, 30 cm. high. Java, New Guinea.

**Festuca nubila** Jungh. ex Steud. *Syn. Pl. Glum.* **1**: 315. 1854.

NETHERLANDS NEW GUINEA: Lake Habbema, 3225 m. camp, *Brass* 9128; common in moist forest glades. Mt. Wilhelmina, 4–11 kilometers northeast of top, alt. 3400–3560 m., *Brass & Myer-Drees* 9715, 9824, 9845; wet grassy valley and forest glades, tufts up to 1 m. high, inflorescence purple. Same, northern slopes, alt. 4050 m., *Brass & Myer-Drees* 10061, 10071; very common on upper slopes, about 80 cm. high. Same, alt. 4050 m., *Brass & Myer-Drees* 10070; common in grass cover of old screes, panicle greenish purple. Java, New Guinea.

This species is closely related to *F. nubigena*, but has taller culms, much longer leaves, larger lax panicles and larger spikelets with hispidulous glumes and lemmas.

**Monostachya oreoboloides** (F. Muell.) Hitchc. *Brittonia* **2**: 107. 1936.

*Festuca oreoboloides* F. Muell. *Trans. Roy. Soc. Vict.* **1**(2): 38. 1889.

NETHERLANDS NEW GUINEA: Lake Habbema, 3225 m. camp, *Brass* 9184. Mt. Wilhelmina, 7–11 kilometers northeast of summit, alt. 3400–3900 m., *Brass & Myer-Drees* 9818, 9941; large bright green cushions among taller grasses of open summit. Same, northern slope, alt. 4100 m., *Brass & Myer-Drees* 10159. Philippines (Luzon), New Guinea.

**Poa saruwagetica** Pilger, *Bot. Jahrb. Engler* **62**: 459. 1929.

NETHERLANDS NEW GUINEA: Mt. Wilhelmina, 7 kilometers northeast of top, alt. 3560 m., *Brass & Myer-Drees* 9844. Endemic.

**Poa egregia** sp. nov. FIG. 1.

Perennis; culmi 18–40 cm. alti; vaginae imbricatae; ligula 6–8 mm. longa; laminae 10–16 cm. longae, involutae vel planae, 2–3 mm. latae, subpungentes; panicula laxa, nutans, 9–12 cm. longa, axi ramisque subcapillaribus; pedicellis 2–3 mm. longis; spiculae 6–7 mm. longae, 2-florae (rarius 3-florae); glumae aequales, 5.5–6 mm. longae, scaberrimae, mucronatae; lemmata 5.5–6.5 mm. longa, lata, scaberrima, apice dentata vel minute lobata, mucronata, basi sparse lanata; palea lemmate brevior, carinis excurrentibus.

Tufted perennial; culms 18–40 cm. tall, scabrous below the panicle,



leafy at the base; sheaths overlapping, strongly nerved, keeled, smooth, those toward the base crowded, thin, papery, loose, pale, finally somewhat shredded, the upper sheaths reaching nearly to the base of the panicle; ligule 6–8 mm. long, hyaline, lacerate, often split; blades 10–16 cm. long, the lower sometimes loosely involute, the others mostly flat, 2–3 mm. wide, scaberulous on the upper surface, smooth beneath, the apex acuminate boat-shaped, tipped with a fine stiff point; panicles lax, drooping, 9 to 12 cm. long, the axis and branches subcapillary, flexuous, scabrous, the branches mostly in pairs, the pairs rather distant, the ultimate branchlets and pedicels angled, scabrous, 2–3 mm. long, the spikelets approximate; spikelets 6–7 mm. long, 2-flowered (rarely 3-flowered), broadly ovate to V-shaped; glumes equal, 5.5–6 mm. long, very scabrous, the apex dentate



FIG. 1. *Poa egregia*; spikelet, palea, and floret,  $\times 10$ ; from *Brass & Myer-Drees 10206*.

or minutely lobed, the midnerve excurrent as a short mucro; rachilla segments slender, smooth; lemmas 5.5–6.5 mm. long, broad, very scabrous, strongly nerved, the apex notched, lobed or dentate, the midnerve excurrent as a mucro, the base with sparse white cottony hairs 1–2 mm. long; palea shorter than the lemma, the scabrous keels excurrent as short mucros, the internerve toothed at apex, scaberulous on the back.

TYPE: *Brass & Myer-Drees 10206*, collected in September 1938, in "alpine grassland; gregarious under shelter of rocks, 4150 m. alt., northern slope of Mt. Wilhelmina," Netherlands New Guinea.

There are two other collections of this species from the same region, *Brass & Myer-Drees 10040*, *10068*, altitudes 4050 m. and 4100 m. respectively, plentiful in wet grassy spots and under rocks on tussock-grass slopes. In no. *10068* a piece of the buried culm with old shredded sheaths is attached at base, giving the appearance of a rhizomatous plant. Nearly



mature caryopses were found with anthers about 1 mm. long, crushed with the stigmas at the summit, indicating closed fertilization.

***Poa lunata*** sp. nov. FIG. 2.

Perennis, caespitosa; culmi 25–35 cm. alti, erecti; vaginae imbricatae; ligula 2–4 mm. longa; laminae 8–15 cm. longae, conduplicatae vel involutae; panícula densiuscula, erecta, 6–8 cm. longa, circa 1–1.5 cm. lata, axi ramisque scabris, pedicellis 2–3 mm. longis; spiculae 5 mm. longae, circa 1.6 mm. latae, 2-florae; glumae 3.5 et 4.3 mm. longae, sublunatae, carina ad apicem scaberula; lemmata 3.5–4 mm. longa, sublunata, acuta, glabra; palea lemma aequans, hyalina.

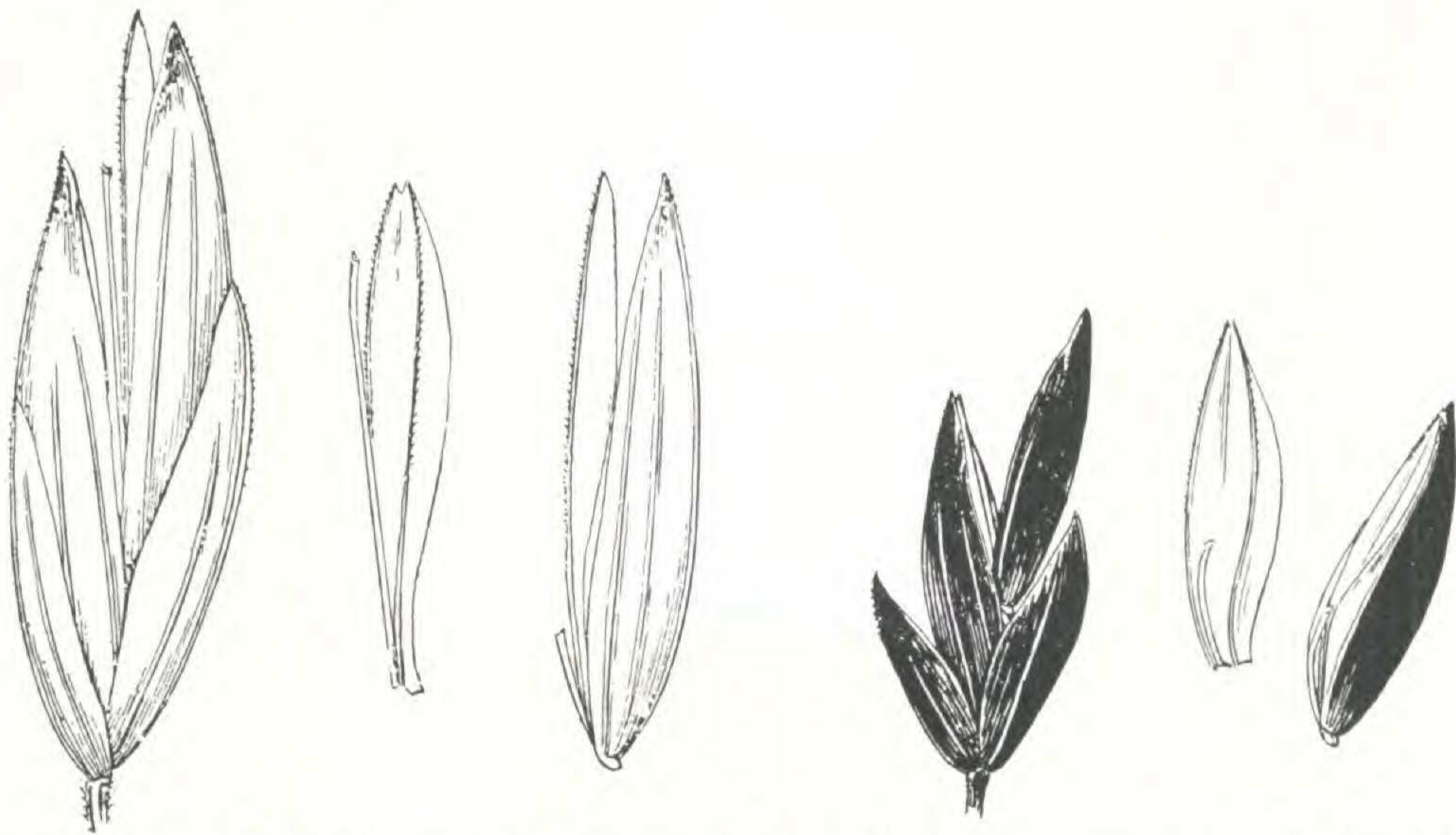


FIG. 2 (left). *Poa lunata*; spikelet, palea, and floret,  $\times 10$ ; from Brass & Myer-Drees 10067.

FIG. 3 (right). *Poa multinodis*; spikelet, palea, and floret,  $\times 10$ ; from Brass 9584.

Tufted perennial; culms 25–35 cm. tall, erect, scaberulous below the panicle; leaves crowded toward the base; sheaths overlapping, rather strongly nerved, keeled, the lower rather papery, loose, pale; ligule 2–4 mm. long, hyaline, acute; blades ascending, 8–15 cm. long (uppermost shorter), folded or loosely involute, slender, smooth, the apex acuminate boat-shaped; panicle erect, narrow, rather densely flowered, the axis, branches, and pedicels scabrous, the branches erect or ascending, naked at base, the pedicels 2–3 mm. long; spikelets 5 mm. long, about 1.6 mm. wide, elliptic in outline, 2-flowered; glumes 3.5 and 4.3 mm. long, almost lunate, the keel scaberulous toward the apex; rachilla segments slender, smooth; lemmas 3.5–4 mm. long, somewhat lunate, especially at maturity, acute, scaberulous on the keel toward the apex, otherwise glabrous; palea as long as the lemma, hyaline, the keels scabrous, terminal rachilla segment nearly as long as the palea.

TYPE: Brass & Myer-Drees 10067, collected in September 1938; "common in small clumps under rocks of old scree, 3950 m. alt., northern slopes of Mt. Wilhelmina," Netherlands New Guinea.

***Poa multinodis*** sp. nov. FIG. 3.

Perennis, e rhizomatibus tenuibus; culmi graciles, basi decumbentes, multinodes, vaginae inferiores imbricatae; ligula 1 mm. longa, decurrens;



laminae planae vel conduplicatae, 2.5–8 cm. longae, 1–1.6 mm. latae; panícula erecta, 6–7 cm. longa, patens, ramis 5–25 mm. longis, pedicellis 0.5–1 mm. longis; spiculae 3 mm. longae, circa 1.3 mm. latae, 2-florae; glumae 3 et 3.7 mm. longae; lemmata 2.1–2.4 mm. longa, latiuscula, firma, acuta; palea lemma aequans, membranacea.

Perennial with slender rhizomes; culms slender, decumbent at base, the lower part with numerous nodes 5–15 mm. apart, the upper 3 nodes distant, scaberulous below the panicle; lower sheaths overlapping, thin, smooth, the upper about as long as the internodes or shorter; ligule 1 mm. long, hyaline, decurrent; blades lax, flat or folded, 2.5–9 cm. long, 1–1.7 mm. wide, minutely scaberulous toward the apex; panicle erect, 6–8 cm. long, open, the axis and branches filiform, scabrous, the branches 5–25 mm. long, finally stiffly spreading or reflexed, the pedicels 0.5–1 mm. long, spreading; spikelets 3 mm. long, about 1.3 mm. wide, leaden-purplish at maturity, 2-flowered; glumes 3 and 3.7 mm. long, the keels convex, scaberulous toward the apex; rachilla segments slender, smooth; lemmas 2.1–2.4 mm. long, rather broad, firm, acute, scaberulous on the keels toward the apex, otherwise glabrous, the intermediate nerves often obscure; palea as long as the lemma, thin-membranaceous, the internerve sulcate toward the summit, the keels scaberulous.

TYPE: *Brass* 9584, collected in August 1938, "in wet forest glade, Lake Habbema, 3225 m. camp," Netherlands New Guinea.

***Poa erectifolia*** Hitchc. *Brittonia* **2**: 111. 1936.

NETHERLANDS NEW GUINEA: Mt. Wilhelmina, 7 kilometers northeast of top, alt. 3720 m., *Brass & Myer-Drees* 9945, often the dominant grass on rather wet open summits, erect in very stiff small clumps, 30–40 cm. high. Endemic.

This specimen differs from *Brass* 4326 (the type) and *Brass* 4420 in having glabrous, coarser, longer blades (8–15 cm. long) and a panicle with longer branches. The decurrent ligule and the spikelets agree with those of the earlier collections.

***Poa crassicaulis*** Pilger, *Bot. Jahrb. Engler* **62**: 458. 1929.

NETHERLANDS NEW GUINEA: Northern slopes of Mt. Wilhelmina, alt. 3900 m., *Brass & Myer-Drees* 10079; gregarious on edges of earth screes. Lake Habbema, 3225 m. camp, *Brass* 9338; alpine grassland, several plants on sandy bed of stream. Endemic.

*Brass & Myer-Drees* 10079 consists of dwarf plants like the type, *Keysser* 4 from Sarawaket Mountains, Northeastern New Guinea, and *Brass* 4469, previously reported from Papua. *Brass* 9338, from a lower altitude, is a well developed plant, the lower sheaths closely imbricate as in the dwarf plants but the blades 5–7 cm. long. The culms are compressed, 12 and 14 cm. long, and the panicles are narrow, rather dense, and 8 cm. long.

***Poa pilata*** sp. nov.

Perennis, caespitosa, 3–4 cm. alta; folia numerosissima; vaginae imbricatae; ligula nulla; laminae squarrosae, conduplicatae, 10–20 mm. longae, (plicate) 0.5–0.8 mm. latae; panícula parva; spiculae 1–4, glabrae, 3.5 mm. longae, circa 1.2 mm. latae, 2–3-florae; glumae 1.6 et 2 mm. longae, latae, 3-nerviae, acutae; lemmata acuta, 2–2.3 mm. longa, nervis intermediis inconspicuis; palea lemmaque aequalia; segmentum superius rachillae productum.



Perennial in dense tufts, branching at base, glabrous as a whole; culms 3–4 cm. high above the surface of the bog, with old buried culms 1–4 cm. long extending downward from the base; leaves very numerous, about 18–20 to a centimeter; sheaths closely imbricate, thin below and adhering to the culm; ligule obsolete; blades firm, squarrose, conduplicate, 10–20 mm. long, 0.5–0.8 mm. wide as folded, the midnerve thick, the apex acute, boat-shaped; panicle not more than 10 mm. long, of 1 to 4 erect spikelets, the rather stiff peduncle exerted 3–10 mm., the peduncle, axis, and pedicels compressed, scabrous; spikelets 3.5 mm. long, about 1.2 mm. wide, 2–3-flowered, glabrous, the rachilla segments rather thick; glumes 1.6 and 2 mm. long, firm, broad, 3-nerved, acute, the second somewhat boat-shaped at apex; lemmas acute, the intermediate nerves obscure, the lower lemma 2.3 mm. long, the upper about 2 mm.; palea about as long as the lemma; upper rachilla segment prolonged back of the palea.

TYPE: *Brass & Myer-Drees 10153*, collected in September 1938, in "alpine grassland, abundant on boggy ground, alt. 4100 m., northern slopes of Mt. Wilhelmina," Netherlands New Guinea. Also collected at Lake Habbema, 3225 m. camp, *Brass 9554, 9580*, very abundant and one of the characteristic plants of open alpine peat bogs. In these two collections the spikelets are defective, either partly eaten away or affected by fungus. *Brass 9942*, "tufted on barren seepage-wet slopes of sandstone, alt. 3850 m., 7 kilometers northeast of the Wilhelmina top," consisting of tufts 1.5–3 cm. high, the lemmas all fallen, and *Brass & Myer-Drees 10205*, "forming loose clumps under rocks on alpine grassland, common but mostly sterile, alt. 4150 m., northern slope of Mt. Wilhelmina," with long under-surface culms clothed with remnants of sheaths, and with blades 2–4 cm. long, are doubtfully referred here.

This species is apparently related to *Poa crassicaulis* Pilger, but is much more delicate, the blades much finer, acute, the ligule obsolete.

#### **Poa** spp.

NETHERLANDS NEW GUINEA: Mt. Wilhelmina, northeast of top, alt. 3720 m., *Brass & Myer-Drees 9929*, scattered on bare peaty ground on edges of dying forest; alt. 3850 m., *Brass & Myer-Drees 10347*, on limestone near waterfall.

Both are tufted perennials, with small open panicles with 2-flowered purple spikelets; the lemmas of no. 9929 are glabrous, those of no. 10347 with very scanty cottony hairs at base.

#### **Deschampsia Klossii** Ridley, Kew Bull. 1913: 268. 1913.

NETHERLANDS NEW GUINEA: Lake Habbema, 3225 m. camp, *Brass 9048, 9312*; marshy flats, sandy pools and open shore of lake. Nine kilometers northeast of Lake Habbema, 2800 m. camp, *Brass 10555*, open beds of streams and on landslips. Mt. Wilhelmina: Two to three kilometers east of top, alt. 3620–3800 m., *Brass 9425, Brass & Myer-Drees 10311*; dominant tussock grass of sheltered hollows, and glade in sub-alpine forest. Seven kilometers northeast of top, alt. 3560 m., *Brass & Myer-Drees 9846, 9848*; tussock grassland. Northern slopes, alt. 4000–4250 m., *Brass & Myer-Drees 10060, 10063, 10065, 10162*; alpine grassland, old screes, and marshy lake margin. Endemic.

#### **Trisetum flavescens** (L.) Beauv. var. **papillosum** Hack. Bull. Herb. Boiss. 7: 702. 1899.

NETHERLANDS NEW GUINEA: Lake Habbema, 3225 m. camp, *Brass 9118*; a few erect tufts in an old native camp. Japan.

Differs from the species in the strongly papillose-scabrous lemmas.

#### **Agrostis Reinwardtii** Van Hall; Miquel, Fl. Ind. Bat. 3: 750. 1855.

NETHERLANDS NEW GUINEA: Lake Habbema, alt. 3225 m., *Brass 9050, 9576*; com-



mon tussock grass in alpine grassland. Mt. Wilhelmina, alt. 3400–4080 m., *Brass & Myer-Drees* 9674, 9717, 9864, 9928, 10064, 10069, wet valleys and forest glades on north and northeast slopes of mountain. Java.

**Agrostis avenacea** Gmel. Syst. Nat. **2**: 171. 1791.

*Avena filiformis* G. Forst. Fl. Ins. Austr. Prodr. 9. 1786. Not *Agrostis filiformis* Vill. Hist. Pl. Dauph. **2**: 78. 1787.

*Agrostis retrofracta* Willd. Enum. Pl. **1**: 94. 1809.

NETHERLANDS NEW GUINEA: Mt. Wilhelmina, 2–7 kilometers northeast of top, alt. 3650–3700 m., *Brass & Myer-Drees* 9821, 9969, 10116; along native path and under native rock shelters. Nine kilometers northeast of Lake Habbema, alt. 2800 m., *Brass* 10726; native clearing. Australia, Polynesia; introduced in America.

**Aulacolepis epileuca** (Stapf) Hitchc. Brittonia **2**: 117. 1936.

*Deyeuxia epileuca* Stapf, Trans. Linn. Soc. Bot. II. **4**: 247. 1894.

*Poa papuana* Stapf, Hook. Ic. Pl. **27**: pl. 2607. 1899.

*Poa epileuca* Stapf, Hook. Ic. Pl. **27**: pl. 2607, in obs. 1899.

NETHERLANDS NEW GUINEA: Lake Habbema, alt. 3225 m., *Brass* 9125, 9581; grassland and forest glades. Mt. Wilhelmina, alt. 3400–3900 m., *Brass & Myer-Drees* 9816, 10074; alpine grassland, 11 kilometers northeast of top. Borneo, New Guinea.

**Garnotia Mezii** Janowski in Mez, Repert. Sp. Nov. Fedde **17**: 86. 1921; **18**: 27. 1922.

NETHERLANDS NEW GUINEA: Four kilometers southwest of Bernhard Camp, Idenburg River, alt. 850 m., *Brass* 13216; rain-forest, common on banks of river. PAPUA: Central Division: Diene, Ononge Road, alt. 50 m., *Brass* 3818 (listed as *G. stricta* Brongn. by Hitchcock, Brittonia **2**: 118. 1936). Endemic.

**Dichelachne novoguineensis** (Pilger) Pilger, Bot. Jahrb. Engler **69**: 254. 1938.

*Muhlenbergia novoguineensis* Pilger, Bot. Jahrb. Engler **62**: 457. 1929.

PAPUA: Central Division: Mt. Albert Edward, alt. 3680 m., *Brass* 4406 (doubtfully listed by Hitchcock, Brittonia **2**: 117. 1936 as *D. sciurea* (R. Br.) Hook. f.). NETHERLANDS NEW GUINEA: Nine kilometers northeast of Lake Habbema, alt. 2800 m., *Brass* 10742; native clearing in forest. Mt. Wilhelmina, alt. 3400 m., *Brass & Myer-Drees* 9802; sandy banks of stream 11 kilometers northeast of top. Endemic.

**Aristida Cumingiana** Trin. & Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. **5**<sup>1</sup>: 141. 1842.

NETHERLANDS NEW GUINEA: Balim River, alt. 1600 m., *Brass* 11741; common along paths on sandy long-deforested slopes. Southwestern Asia, Philippines, New Guinea.

**Cynodon Barberi** Rang. & Tad. Jour. Bombay Nat. Hist. Soc. **24**: 846. 1916.

NORTHEASTERN NEW GUINEA: Morobe District: Kajabit Mission, *Clemens* 10473 bis. India; new to New Guinea.

**Hierochloë redolens** (Vahl) Roem. & Schult. Syst. Veg. **2**: 514. 1817.

*Holcus redolens* Vahl, Symb. Bot. **2**: 102. 1791.

NETHERLANDS NEW GUINEA: Lake Habbema, 3225 m. camp, *Brass* 9461; abundant among tussock grasses in a limestone sinkhole. Mt. Wilhelmina, 7–11 kilometers northeast of top, alt. 3400–3560 m., *Brass & Myer-Drees* 9712, 9830; alpine grassland, common among tussocks in moist situations. Northern slopes of Mt. Wilhelmina, alt. 4000 m., *Brass & Myer-Drees* 10062; common in wet situations.

**Hierochloë Horsfieldii** (Kunth) Maxim. Bull. Acad. Sci. St. Petersb. **32**: 627. 1888.

*Ataxia Horsfieldii* Kunth, Rev. Gram. **1**: 22. 1829, name only; Enum. Pl. **1**: 39. 1833, name only; Kunth ex Horsfield in Bennett, Pl. Jav. **8**: pl. 3. 1838–1852.

*Hierochloë angusta* Hitchc. Brittonia **2**: 118. 1936.

NETHERLANDS NEW GUINEA: Lake Habbema, 3225 m. camp, *Brass* 9049, 9117, 9577; forest margins, glades and lake shore. NORTHEASTERN NEW GUINEA: Sarawaket, *Clemens* 7261; bank of rivulet, alpine meadow. Java.



The type of *Hierochloë angusta*, Brass 4412, Mt. Albert Edward, Papua, is a slender specimen with glabrous foliage, narrow blades, and narrow panicle only 6–7 cm. long. The plate of *Ataxia Horsfieldii* shows a much larger plant with wider blades and looser panicle. The later New Guinea collections and additional specimens from Java show that the species is variable, ranging from narrow-leaved plants like Brass 4412, 9577, and Clemens 7261, to tall, broad-leaved plants like Brass 9049 and most of the Java specimens. The panicles range from small and almost spikelike, as in Brass 4412, Clemens 7261, and two Java specimens, to as much as 20 cm. long with branches to 8 cm. long, as in Brass 9049. The foliage in the type of *H. angusta* is glabrous and that of *Ataxia Horsfieldii* is described as glabrous, but some of the specimens from both Java and New Guinea are retrorsely pubescent on the sheaths and spreading-pubescent on the upper surface of the blades. This is the type species of the Section *Ataxia* (R. Br.) Hack., in which the lower floret is staminate or neuter and the second neuter and usually without a palea. In *Hierochloë* proper the lower florets are staminate.

**Arundinella furva** sp. nov. FIG. 4.

Perennis; culmi ascendentes vel erecti, 75–95 cm. alti; nodi strigosi; vaginae apice et margine hirsutae; ligula 0.5 mm. longa, longe ciliata; laminae planae, 5.5–10.5 cm. longae, 5–10 mm. latae; panícula erecta, 10–16 cm. longa, 1–1.5 cm. lata, fusca, axi ramisque scabris, pedicellis 1–3 mm. longis; spiculae 5–6 mm. longae; glumae acuminatae, primo 3-nervio, secundo paulo longiore, 5-nervio; lemma sterile acuminatum, 3-nervium; fructus 3 mm. longus, 0.6 mm. latus, fuscus, callo piloso, lem-mate bidentato, aristato, arista 3–4 mm. longa, prope basim geniculata.

Perennial with extravaginal innovations, sometimes rooting at the lower nodes; culms ascending to erect, 75–95 cm. tall, terete, firm, smooth; nodes strigose; sheaths hirsute on the collar and on the margin toward the summit, otherwise glabrous, the lower overlapping; ligule a firm membrane 0.5 mm. long, ciliate with white hairs 3–5 mm. long, the hairs brittle and broken off in old sheaths; blades ascending, firm, flat or the margins involute toward the apex, 5.5–10.5 cm. long, 5–10 mm. wide, slightly rounded at base, acuminate, the margins scabrous and sparsely stiffly ciliate toward the base, the hairs mostly broken off; panicle long-exserted, erect, 10–16 cm. long, 1–1.5 cm. wide, dusky purplish brown, the axis and branches erect, angled, scabrous, the branches slender, the lower distant, naked at base; pedicels 1–3 mm. long, angled, scabrous; spikelets 5–6 mm. long; glumes firm, acuminate, the first 3-nerved, the nerves scabrous, the second about 1 mm. longer than the first, 5-nerved, the nerves glabrous; sterile lemma slightly exceeding the first glume, acuminate, 3-nerved, its palea shorter, empty; fruit 3 mm. long, 0.6 mm. wide, dark purplish brown, minutely papillose-roughened, the callus pilose, the hairs white, 0.5–1 mm. long, the lemma bidentate, the awn 3–4 mm. long, twisted at base, geniculate just above the base.

TYPE: Clemens 5826a, collected in March 1937, at 2600 m. alt., Sarawaket, Morobe District, Northeastern New Guinea. A second collection from the same region is Clemens 5250, from "open place, Basu Tamanac, Sarawaket," alt. 2300 m., Jan. 31, 1937.



This species belongs in *Arundinella* proper as limited by Keng (Nat. Cent. Univ. Science Reports, Biology **2**: 20. 1936). It somewhat resembles *A. fuscata* Nees, but is taller and nearly glabrous, with longer spikelets and much larger fruit. It differs from all the species known in the very short twisted column of the awn, the geniculum being scarcely 1 mm. above the base of the awn.

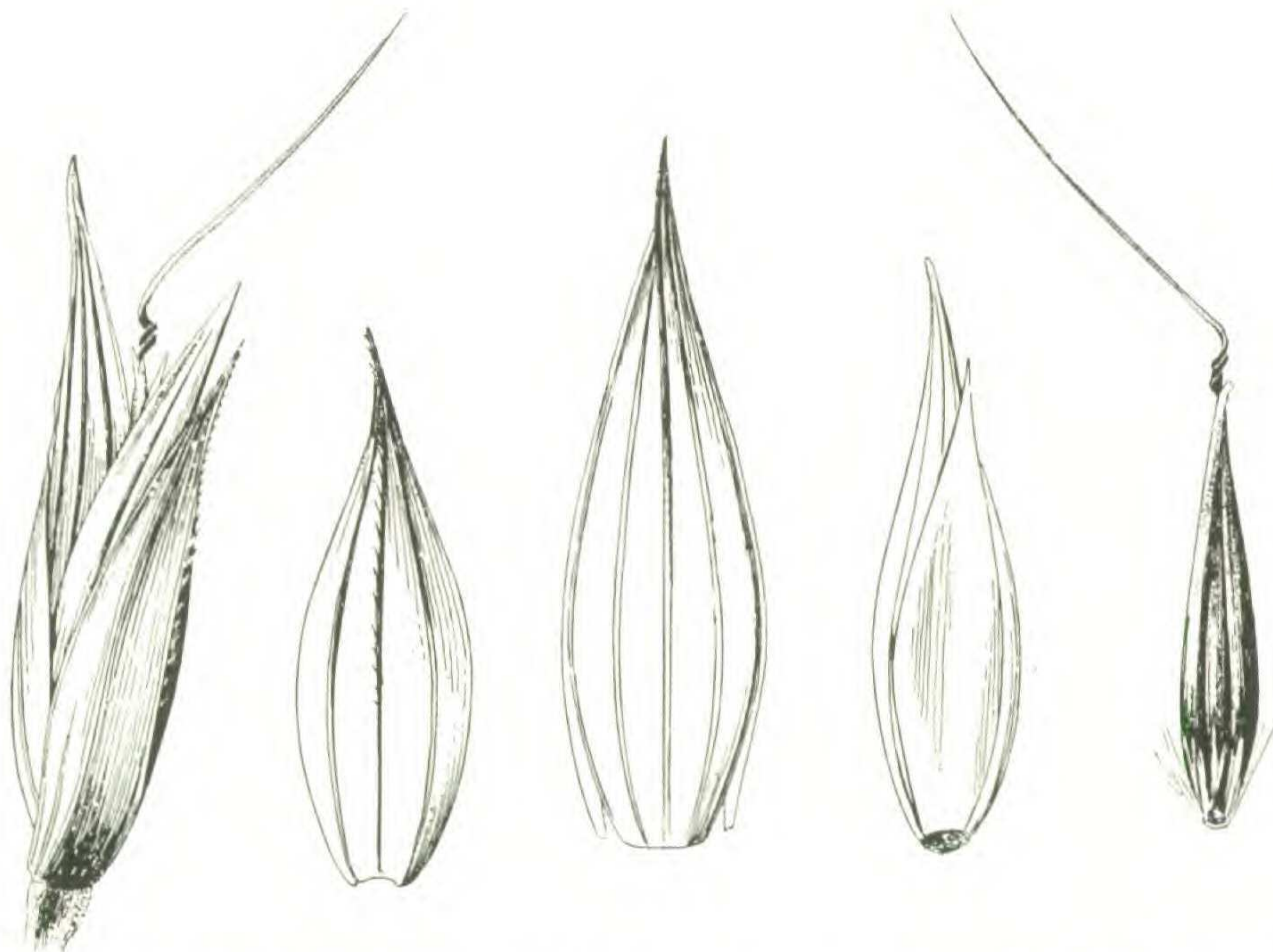


FIG. 4. *Arundinella furva*; spikelet, first glume, second glume, sterile floret, and fruit,  $\times 10$ ; from *Clemens 5826a*.

**Digitaria violascens** Link, Hort. Berol. **1**: 229. 1827.

*Paspalum chinensis* Nees in Hook. & Arn. Bot. Beechey Voy. 231. 1836.

*Paspalum minutiflorum* Steud. Syn. Pl. Glum. **1**: 17. 1854; not *P. minutiflorum* Desv. 1831.

*Digitaria chinensis* A. Camus, Not. Syst. Lecomte **4**: 48. 1923; not *D. chinensis* Hornem. 1819.

NETHERLANDS NEW GUINEA: Balim River, alt. 1600 m., *Brass 11822*; sandy soil on deforested slopes, not common. NORTHEASTERN NEW GUINEA: Morobe District: Ogao, alt. 2000 m., *Clemens 10359*. Eastern and southern Asia, East Indies, Philippines; introduced in American tropics and subtropics.

**Panicum auritum** Presl, Rel. Haenk. **1**: 305. 1830.

NETHERLANDS NEW GUINEA: Bernhard Camp, Idenburg River, alt. 50 m., *Brass 13942*; common in swamp forests of river silt plains, ascending to 2 m. East Indies, southeastern Asia to Philippines.

**Panicum zizanioides** H.B.K. Nov. Gen. & Sp. **1**: 100. 1815.

NETHERLANDS NEW GUINEA: Bernhard Camp, Idenburg River, alt. 50 m., *Brass 13946*; abundant in semi-open swampy forest of river flood plain; massed and ascending to 1 m. Tropical America and Africa, India, New Guinea.

**Ichnanthus vicinus** (F. M. Bailey) Merr. Enum. Phil. Fl. Pl. **1**: 70. 1922.

*Panicum vicinum* F. M. Bailey, Syn. Queensl. Fl. Suppl. **3**: 82. 1890.

NETHERLANDS NEW GUINEA: Hollandia and vicinity, alt. 50 m., *Brass 8909*;



abundant on shaded sandy banks in moist ravine. Four kilometers southwest of Bernhard Camp, Idenburg River, alt. 850 m., *Brass 13210*; occasional on flooded rocky banks of river. Southern Asia, East Indies, northern Australia.

**Sacciolepis contracta** (Wight & Arn.) Hitchc. Mem. Bishop Mus. **8**: 199. f. 90. 1922.

*Panicum contractum* Wight & Arn. Linnaea **10**: Litt. 117. 1836.

NETHERLANDS NEW GUINEA: Nine kilometers northeast of Lake Habbema, alt. 2800 m., *Brass 10736*; suberect tufts about 80 cm. tall, native clearing in forest. Bele River, 18 kilometers northeast of Lake Habbema, alt. 2200 m., *Brass 11524*; plentiful on old garden lands, weak ascending tufts to about 50 cm. tall. Balim River, alt. 1600 m., *Brass 11824*; plentiful on sandy long-deforested slopes, erect tufts 40 cm. tall. Southern Asia, Japan, East Indies, Philippines.

**Isachne albens** Trin. Icon. Gram. *pl.* 85. 1827.

NETHERLANDS NEW GUINEA: Bele River, 18 kilometers northeast of Lake Habbema, alt. 2200 m., *Brass 11559*; common in open secondary forest, scrambling or in suberect clumps 1–1.5 m. tall. Southern Asia and East Indies.

**Isachne Brassii** Hitchc. Proc. Linn. Soc. N. S. Wales **54**: 146. 1929.

NETHERLANDS NEW GUINEA: Bernhard Camp, Idenburg River, *Brass 14055* [no data on this label, other than printed locality]. Endemic.

Plant larger than previous collections, the culms to 50 cm. long, blades to 7 cm. long and 7 mm. wide, the panicle 7 cm. long.

**Isachne Brassii** Hitchc. var. **villosa** Hitchc. Brittonia **2**: 123. 1936.

NETHERLANDS NEW GUINEA: Fifteen kilometers southwest of Bernhard Camp, Idenburg River, alt. 1500 m., *Brass 12370*; rain-forest, on sand in bed of small stream. Eighteen kilometers southwest of same, alt. 2150 m., *Brass 12475*; one small clump on open rock slide; more densely villous than usual. Endemic.

**Isachne globosa** (Thunb.) Kuntze, Rev. Gen. Pl. **2**: 778. 1891.

*Milium globosum* Thunb. Fl. Japon. 49. 1784.

*Isachne australis* R. Br. Prod. Fl. Nov. Holl. 196. 1810.

NETHERLANDS NEW GUINEA: Nine kilometers northeast of Lake Habbema, alt. 2800 m., *Brass 10743*; abundant on native clearing in forest. Bele River, 18 kilometers northeast of Lake Habbema, alt. 2200 m., *Brass 11542*; plentiful on sandy river banks and in old gardens. Balim River, alt. 1600 m., *Brass 11823*; plentiful on deforested slopes. China to Philippines and East Indies, New Guinea and Australia.

**Isachne grisea** K. Schum. in Schum. & Lauterb. Nachtr. Fl. Deutsch. Schutzgeb. Südsee 57. 1905.

PAPUA: Central Division: Murray Pass, *Brass 4642* (listed by Hitchcock, Brittonia **2**: 123. 1936, under *I. pauciflora* Hack.). NORTHEASTERN NEW GUINEA: Morobe District: Sattelberg, *J. & M. S. Clemens 312*; forest, Sarawaket, *J. & M. S. Clemens 6097*. Endemic.

**Isachne micrantha** Merr. Philip. Jour. Sci. Bot. **5**: 168. 1910.

NETHERLANDS NEW GUINEA: Lake Habbema, alt. 3225 m., *Brass 9556*; locally plentiful on open boggy ground, prostrate. Nine kilometers northeast of Lake Habbema, alt. 2800 m., *Brass 10740*; plentiful in native clearing in forest. Eighteen kilometers northeast of Lake Habbema, alt. 2200 m., *Brass 11583*; abundant in native gardens. Four kilometers southwest of Bernhard Camp, Idenburg River, alt. 850 m., *Brass 13201*; matted on flood-washed rocks on river bank. NORTHEASTERN NEW GUINEA: Morobe District: Yunzaing, *Clemens*, Sept. 1936; wet trails. Philippines, New Guinea.

**Isachne scabrosa** Hook. f. Fl. Brit. Ind. **7**: 23. 1896.

PAPUA: Central Division: Mt. Tafa, alt. 2400 m., *Brass 4871*; plentiful on open



banks of small stream flowing over landslide debris. NORTHEASTERN NEW GUINEA: Morobe District: Ogeramngang, alt. 1800 m., *J. & M. S. Clemens 6958a*; wet open forest trail. India, New Guinea.

**Isachne stricta** Elmer, Leaflets Philip. Bot. **2**: 463. 1908.

NORTHEASTERN NEW GUINEA: Morobe District: Yunzaing, alt. 1360 m., *J. & M. S. Clemens 4105*; in seepage over rock slope, rare. Ogeramngang, alt. 1700 m., *Clemens 5402*. Samanzing, alt. 1500–1800 m., *Clemens 9208, 9239*; bank of mountain rivulet. Philippines, New Guinea.

The only collection previously known (the type), from Dumaguete (Cuernos Mts.), Island of Negros, Philippines, is very immature and has longer blades than the overmature Clemens specimens, but on the whole they agree very closely.

**Echinochloa crusgalli** (L.) Beauv. Ess. Agrost. 53, 161, 169. 1812.

*Panicum crusgalli* L. Sp. Pl. 56. 1753.

NETHERLANDS NEW GUINEA: Balim River, alt. 1600 m., *Brass 11793, 11803*; common in ditches, erect, 1 m. tall. Nearly awnless form. Warm regions of both hemispheres.

**Imperata cylindrica** (L.) Beauv. Ess. Agrost. 165, 177. 1812.

*Lagurus cylindricus* L. Syst. Nat. ed. 10. **2**: 878. 1759.

*Imperata arundinacea* Cyrillo, Pl. Rar. Neap. **2**: 27. 1792.

NETHERLANDS NEW GUINEA: Northern slopes of Mt. Wilhelmina, alt. 3200 m., *Brass & Myer-Drees 10235*; covering beaches of gravel and sand, Wamena River. Nine kilometers northeast of Lake Habbema, alt. 2600 m., *Brass 10902*; on old landslip in forest. Bele River, 18 kilometers northeast of Lake Habbema, alt. 2200 m., *Brass 11491*; dominant grass on old garden lands. Warm regions of the eastern hemisphere.

**Saccharum spontaneum** L. Mant. Pl. **2**: 183. 1771.

NETHERLANDS NEW GUINEA: Eighteen kilometers northeast of Lake Habbema, alt. 2200 m., *Brass 11374*; very abundant in tall thickets on abandoned garden land, 2.5–3 m. high, Bele River. Balim River, alt. 1600 m., *Brass 11778*; abundant on alluvial soil of river banks. Four kilometers southwest of Bernhard Camp, Idenburg River, alt. 850 m., *Brass 13264*; colonizing sand and gravel beaches. Bernhard Camp, Idenburg River, alt. 50 m., *Brass 13791*; in dense pure stands, 7–8 m. high, on recent silt deposits of river banks. Warm regions of Asia, the East Indies, Philippines.

**Saccharum spontaneum** var. **klagha** (Jungh.) Hack. in DC. Monogr. Phan. **6**: 116. 1889.

*Saccharum klagha* Jungh. ex Steud. Syn. Pl. Glum. **1**: 405. 1854.

NETHERLANDS NEW GUINEA: Hollandia and vicinity, *Brass 8920*. Java.

Differs from the species in the slightly larger spikelets with shorter less silky hairs.

**Eulalia leptostachys** (Pilger) comb. nov.

*Pollinia leptostachys* Pilger, Bot. Jahrb. Engler **52**: 170. 1914.

NETHERLANDS NEW GUINEA: Nine kilometers northeast of Lake Habbema, alt. 2600 m., *Brass 10901*; a few tufts on dry open landslip in forest. Bele River, 18 kilometers northeast of Lake Habbema, alt. 2200 m., *Brass 11363*; covering high, gravelly, formerly forested banks of river, ascending and tangled. Balim River, alt. 1600 m., *Brass 11825*; locally abundant on long-deforested slopes. Endemic.

**Microstegium gratum** (Hack.) A. Camus, Ann. Soc. Linn. Lyon **68**: 201. 1921.

*Pollinia grata* Hack. in DC. Monogr. Phan. **6**: 175. 1889.

*Eulalia grata* Kuntze, Rev. Gen. Pl. **2**: 775. 1891.



NETHERLANDS NEW GUINEA: Four kilometers southwest of Bernhard Camp, Idenburg River, alt. 850 m., *Brass 13720*; occasional in young seral rain-forest on sandy flood banks. Southern China to India and East Indies.

***Andropogon intermedius*** R. Br. Prodr. Fl. Nov. Holl. 202. 1810.

NETHERLANDS NEW GUINEA: Balim River, alt. 1600 m., *Brass 11616, 11805, 11845*, common on deforested slopes. China to India, East Indies, Philippines and Australia.

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